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ANALYZING EASE OF CIRCULATION IN THE BOAT TERMINAL BUILDING

INTRODUCTION

In urban cities, the difficulty in moving about is apparent in the day to day lives of urban dwellers. This problem is not new but due to an ever increasing population of urban cities in developing nations without corresponding increase in transportation infrastructure, congestions and other by-products of this sector is inevitable.

Rivers state comprises of upland and riverine areas. The upland accounts for 61 per cent of the state, while the riverine area accounts for 39 per cent of the state. It is therefore safe to say the major transport ways are road and water transport. (riversstate.net.ng. Accessed September 2016)

Socially, a unique feature of an urban city is an effective public transport system. The present transportation infrastructure in Rivers State is insufficient to achieve the desired economic growth and development. Rivers State ought to have both land and water transport properly functioning and integrated because of the approximate 60/40% ratio occupancy on land and water respectively. The government of Rivers state in a bid to tackle the inadequacies of the transport system set up bus terminals at Iribe, Omagwa, Emohua and Eleme. Unfortunately, these terminals are currently not operational. Not much has been done to improve the water transport sector.(www.thetidenewsonline.com. Oct 18th, 2010)

Presently in Nigeria, owning a car or more is viewed as a status symbol. This contributes to the ever growing number of vehicles causing traffic congestion. Large buses and cargo vehicles are 3 not left out as their awkward manoeuvres on small and sometimes improperly planned roads disrupt free traffic flow. In the riverine areas, most families have at least a dug out boat or two.

The trend of privately owning a car and/or boat for personal uses discourages public transportation. The Rivers state government has kick started plans to urbanize other towns to

reduce the influx of people into Port Harcourt city. This can be seen in the greater Port Harcourt city project. A functioning transport system is therefore of paramount importance.

Water Transport System

Maritime transport is the shipment of goods (cargo) and people by sea and other waterways. No doubt, maritime transportation is a major conduit of international trade. Waterways are critically important to the transportation of people and goods throughout the world. The complex network of connections between coastal ports, inland ports, rail, air, and truck routes form a foundation of material economic wealth worldwide. Maritime transportation has always been the dominant support of global trade. More than 80% of world trade is carried out by sea. Maritime transportation is by far the cheapest mode of transportation globally. (Vince, 2003)

Maritime transportation, similar to land and air modes, operates on its own space, which is at the same time geographical by its physical attributes, strategic by its control and commercial by its usage. While geographical considerations tend to be constant in time (with the exception of the seasonality of weather patterns); strategic and especially commercial considerations are much more dynamic. The geology of maritime transportation is composed of two major elements, which are rivers and oceans. Although they are connected, each represents a specific domain of maritime circulation. The notion of maritime transportation rests on the existence of regular itineraries, better known as maritime routes. (Water encyclopedia, accessed September 2016)

The most recent technological transformations affecting water transport have focused on modifying water channels (such as dredging port channels to higher depths), on increasing the size, the automation and the specialization of vessels (e.g. container ships, tanker, bulk carrier) and developing port terminal facilities to support the technical requirements of maritime transportation. These transformations partially explain the development of a maritime traffic that has been adapting to increasing energy demand (mainly fossil fuels), the movements of raw materials, location of major grain markets and last but not least to the growth of the trade of parts and finished goods.

Modern ferries, cruise ships, and many types of recreational boats carry passengers for purposes ranging from daily business commuting to fishing to sightseeing. The ferry system in Halifax, Nova Scotia (Canada) exemplifies the importance of waterways for transportation.(Water encyclopedia, accessed September 2016)

Transportation and the Urban Form

Transportation is closely linked with urban growth. The motorcar manufacturer Henry Ford echoes this sentiment in his remark ‘Transportation is civilization’. Efficiently distributing freight and moving people has always been an important factor for maintaining the cohesion of economic systems from empires to modern nation states. Geographical mobility is crucial to the successful functioning of any population cluster. Each successive growth stage in an economy is dominated by a particular movement technology and transport network expansion process. The convergence, position and halting points of transportation connections are established with the development of settlements. This interaction between transportation and settlements has been a determining factor in social and economic development along with physical growth in the urban scale. This fact is relatively indicative of the trading activities within the city and its region. For this reason, the interaction between transportation and a city can basically be explained by urban growth.

The evolution of transportation has generally led to changes in urban form. The more radical the changes in transport technology have been, the more the alterations in urban form. Broadly speaking the two features of cities that determine the way people interact with one another are in their urban form, the pattern and density of their land and water use and their transportation systems. Moreover, these two are inextricably related; the transportation system shapes metropolitan form and the form of the metropolitan shapes the transportation system. The development of transport and society are inescapably interlinked. Cities have traditionally responded to growth in mobility by expanding the transportation supply. Overtime investments in transportation provoke changes in land use pattern. Urbanization and urban developments are occurring in accordance to the development of urban transport systems particularly in terms of their capacity and efficiency.

Transportation in Nigeria

Prior to the oil boom in Nigeria, goods and passengers were often transported by lorries and canoes. It was generally unsafe and this discouraged long distance travel. After the oil boom, Nigeria experienced an explosion in mass transportation business. As more people began to travel longer distances, the need for a more comfortable means of transport was necessary. This increased commercial and industrial activities without a commensurate improvement in transportation services.

One problem that plagued the mass transit scheme in Nigeria is that of management. Most transporters in Nigeria have no organized system of operation. Moreover, there is no transportation policy in Nigeria that is made to guide the transport merchants in setting up their business. Consequently, most government owned motor parks in Nigeria are makeshift arrangements and do not stand the test of time. The government is usually concerned with generating revenue. At the inception of these 'motor parks', revenue collectors are stationed at the entrances while the inside operation of the park is left at the callous hands of touts...

Marine transport is about the cheapest means of transportation and has the advantage of heavy haulage. Transport facilities are the formative power of economic growth and lack of them are a major hindrance to rapid economic growth and social progress. To ensure that no part of the country is left behind in the economic development and progress, it is necessary to establish a means of reaching all parts of the country. For efficient inter flow and distribution of both domestic and foreign products.

The Nigerian Inland waterway system, comprising the coastal creeks and lagoons and the major rivers, constituted an indispensable component in the development of the country's dynamic economy. However, the waterways are navigable with difficulty and even the better ones are usually troubled with great fluctuations. Shifting channels and interrupting rapids obstruct continuous operation of long stretches, while the silting up of the deltas and delta ports hinder access to the sea. Consequently, only a few stretches of the major rivers are navigable by high capacity power-craft. Although the Cross River is used to bring exports down to Calabar port, but it is the Niger and its main eastern tributary, the Benue, which are the leading Inland Waterways. Petroleum exploration and exploitation in the Niger Delta coupled with other oil

related activities, now generates enormous traffic, and the oil companies, with the help of sophisticated watercraft, are making intensive use of the creeks and lagoons.

Transportation in Rivers State

Rivers state boasts of road, rail and inland waterways transport system but road transport is by far the most dominant of the three. This can be inferred from the considerable number of transport service providers in rivers state. Despite the fact that road transport system enjoys more preference than water and rail, there are still major setbacks in road transport system. Because of the notable ecological problems, road networks are poorly developed. With the exception of a handful of transport companies, most operate out of makeshift 'terminals'.

As for jetties, it is still a sore matter that although improvements have been made in road transportation, there has been no improvement in waterways transportation.

Three main factors responsible for the choice of mode of transport are:

- (i) Characteristics of Journey that includes: Journey time/length and Journey purpose.
- (ii) Characteristics of travelers that includes income and vehicle-ownership.
- (iii) Characteristics of transport system that includes relative travel time, relative travel cost, relative level of service and accessibility indices.

Another factor that does not always come into play is baggage space area. Tricycles although relatively new to rivers state and Nigeria as a whole, are used in high density residential areas. Taxis are a favourite for short distances, small shuttle buses a close second and luxurious buses coming third (with cost being its selling point for intrastate and baggage space for interstate travel). Apart from the ancient dugout canoe, the major modes of water transport are the outboard engine boat, the in-board engine boat and the speedboat. The speedboat is strictly a passenger vessel. It is the fastest and the most flexible in spatial operation. The in-board boat on the other hand has its advantage in its carrying capacity. Although rarely used for travels, canoes and rafts are quite common for penetrating otherwise inaccessible creeks where heavier mechanized crafts are usually disadvantaged. They are however very slow.

Transport - The Instrument of Urban Development and Functioning

Transport has been described as the basis of how cities work. The city of today is very complex. It is made up of living, functioning and interacting parts. It covers large expanse of land and accommodates varied activities. In order to allow the necessary functional inter-relationships among the different land uses in urban areas, cities are served with transport facilities. Transport systems are the veins and arteries of urban areas; linking together social areas and functional zones. Intra-urban transportation in particular functions to integrate various parts of the city: work, school, recreation, etc. into a unified whole. The urban centres as we know today are therefore not possible until transport allows the movement of people and goods that make them function.

There is overwhelming evidence to show that cities of today depend on transport for efficiency. For instance, food items and raw materials must be conveyed to the different land use types where they are needed. Food items are moved to residential areas, and raw materials to industrial land-use. Waste generated must be collected and removed. To pay for the food and manufactured materials, people must work. Manufactured goods produced must be distributed. The urban residents must be on the move constantly in order to make urban activities and functions among others possible; and this movement is allowed by a mechanism- Transport. Transport therefore remains a non-negotiable instrument of city development and functioning.

The Physical Features of Deltaic Areas

Navigation in creeks, rivers and lagoon is presently done with local dug out boat or open speed boats. These boats provide cheap means of transportation. Also this mode of transport was found to be readily accessible, safe, flexible, meet local needs and is under the control and management of indigenous people. The more navigable the inland water ways are, the more this mode of transport allows people to have access to other remote communities and for products and services to be distributed widely at lower costs.

The Impact of the Oil Economy

In recent times, oil companies in Bayelsa, Delta and Rivers states have made the development of water transportation a priority. These companies invested heavily in dredging and widening river channels, providing comfortable boats and jetties, installing buoys and other water transport facilities. Unfortunately, like precolonial predecessors, this is done primarily for the use of the

companies' services and their staff to increase production output. Occasionally though, passengers benefit from these services. (Obeta, 2014)

The Pattern of Economic Development in These States

Most of the agriculturally productive areas and oil wells in the region are located adjacent to navigable water channels. (Obeta, 2014)

Government Support/ Policies

The Bayelsa and Rivers state governments are presently investing in the development of water transport to help the people that live in the remote communities in the states. In contrast the volume of human traffic along the waterways in other states (E.g. Edo, Imo, Anambra, Kogi, Niger, and Benue) was found to be typically lower than in Lagos, Bayelsa and Rivers and other deltaic states. The causes of the low volume of human traffic along the navigable rivers in these states were found to be complex but are generally related to socio- cultural influences and easy access to road transport. Investigations revealed that inland water transport outside Lagos, Rivers Akwa-Ibom and Bayelsa states is characterized by:

- I. Low volume of human traffic arising from low patronage
- II. Use of uncomfortable vessels that exposes the passengers to environmental hazards-rain, wind, sun radiation etc.
- III. Inadequate cargo assets as most traders and industrialists generally prefer to transport their goods by roads.
- IV. Use of slow moving vessels
- V. High levels of risks –the channels are not properly policed and robberies were reported to be frequent.
- VI. Minimal competition between limited water transport operators.

VII. Inadequate access to river ports by farmers who live in remote geographic locations.

VIII. Inadequate access to assistance by water transport operators to purchase and or maintain modern and comfortable boats or to recover from disasters such as floods, accidents, robberies etc. (Obeta, 2014)

Fire Rating

The requirement for protecting life, health, safety and for minimizing property management must be incorporated in the design. Therefore, a fire resistant construction system is required except where a sprinkler system is incorporated. Floors above area must have a minimum of two means of egress. A maximum travel distance from any point to an exterior exit door must not exceed 50-60m. Elevators and spaces containing central heating must have a two-hour separation from the rest of the building.

Energy Use and Conservation

Going green is the new way to go. Natural means of reducing energy use such as landscaping for shade etc. should be encouraged to reduce spending so much energy in cooling. 79 Maximizing use of natural lighting should be emphasized. This aids the conservation of energy needed during the day to light up a space or spaces. Also, alternative sources of energy such as use of solar panels can come into play to further reduce total energy used.

Functional Analysis

There are three categories of accommodation in a Transport Interchange. These include the following:

- a. Interchange services which directly coordinate the daily activities of the interchange.
- b. Transport support services which are essential for sustaining the interchange, and which are functionally closely related to them.

c. General support/ancillary services which are responsible for general administration, interchange recreation, catering services, the disposal of waste and the maintenance of mechanical services like lighting and energy, heating and other mechanical aids.

Interchange Services

1.The Transit/Movement Department/Unit: The function of the department is to organize and coordinate passenger movement in and out of the interchange for general efficiency. They are also make provisions for adequate safety devices for the passenger's travelers. The maintenance/repair of grounded boats/buses is also part of their routes and concourses, as well as passenger checks in and checkout lobbies, arrival and departure halls, boarding routes, gangways, jetties and vehicular access and discharge routes to and fro.

2. The Interchange Support Services: This function of this unit/department includes the coordination of the leisure/ relaxation spaces in the interchange. They coordinate the indoor recreation rooms, the interchange cybercafé, and the interchange snacks bar. The maintenance of outdoor game area is also part of the duties of this unit. This unit is also responsible for the coordination of the public relations/social services functions of the interchange. These functions include: the management, the interchange multipurpose hall designed to cater for meetings, convention or workshop on marine transportation and related fields; as well as staff training section.

This unit also supervises the interchange outdoor recreation/ceremonial lawn. The recreation spaces will contain facilities that will cater for indoor passive games like draughts, cards, ludo, snooker and/or slot machines.

General Support Service

A. Central Administration

This is of the center of coordination of activities in the interchange. The administration unit incorporates all facilities that ensure easy monitoring of activities, including offices for staff, boardrooms, control tower etc. The central administration houses the following spaces;

i) The Reception Area: The reception area should be immediately apparent and welcoming on entering the interchange. It should be so arranged in relation to waiting spaces. There is need for a general waiting space in the main recreation area. The reception/waiting area is a center about which the whole of the work of the interchange administration revolves, and in consequence main doors and corridors have to be planned leading it to rooms and even whole departments.

ii) Administrative Offices: The administrative offices are spaces required for the proper functioning of the transport interchange. These offices are needed for the daily procurement, accumulation and processing of information, management and handling of physical items and the policies of the interchange. The following departments will be used to determine required spaces;

a. Administrative section

b. Accounts section

c. Stores section

d. Technical maintenance section

e. Catering section

f. Lodging section

g. Engineering section

h. Recreation section etc.

B. The Medical Consulting Rooms

The consulting room is the central working unit of most departments and around this room (or rooms in larger schemes) may be grouped all other departmental rooms. The sizes of consulting rooms depend largely on whether treatment is likely to be given in addition to examination of patients and the type of equipment needed for such treatment.

Undressing, examination and minor treatment can all be done in the consulting room if it is large enough, but they can also take place in an adjacent examination room. The latter procedure can

save some of the doctor's time, give greater flexibility and enable a nurse to deal with a patient in an examination room while the doctor continues with another patient in the consulting room.

C. Welfare Facility

There are facilities provided in the interest and comfort of the interchange staff and users. They are normally provided to enhance the good working conditions within the interchange. These facilities include – restaurant, kitchen/servery, snacks bar, indoor and outdoor recreation spaces etc.

D. Commercial

Besides ensuring effective intermodal transportation, transport hubs make profits; this in turn results into economic upliftment of the country at large. The provision of lettable recreational spaces, shops, and office floors for unknown and anticipated tenants will provide space for group workers.

E. Technical facilities

These facilities are necessary to ensure the proper functioning of the building with minimal automation. They include access stairs, lifts, mechanical and electrical installations.

F. Security

These are facilities necessary to ensure the security of the building, its users and their properties. They include automation, within the building to prevent hazards, effectively located near escape stairs –wells for its users to provide adequate security of life and property. Also a joint task force unit should be incorporated to checkmate illegal activities, and speedily resolve conflict where necessary.

G. Environmental

These are facilities to ensure the general well-being of the building premises and general ambience of the facility. They include a well landscaped environment, adequate car parks, a well-lit premises, etc.

H. Passenger Interchange

The interchange building is the service centre for the transfer of passengers and baggage between automotive vehicles and river craft and will house facilities and concessions for passenger comfort, ticket office and weighing scales. In addition, offices and post office can be located within it. A good circulation network which will allow simple and direct boarding and unloading of baggage is an essential requirement. The area of the ticket lobby is governed mainly by the required length of ticket counter which is in turn determined by the volume of peak hour embarking passengers. Sufficient space will be provided to permit passenger queuing and the inevitable cross flow of traffic. Peak hour passenger represents the highest number of passengers embarking and disembarking during the busiest hour of a busy day or a typical week.

I. Tourist facilities

The additional facilities that will be provided to boost the tourist potential of the site include a garden park near the buildings, a restaurant and an observation deck.

CONCLUSION

The major Architectural achievement of this project is the successful incorporation of all major travellers needs in a simple design arrangement that allows for easy flow, by adopting well defined separation of activity units within and outside the building. It also eliminated the hazardous transport system currently experienced within the state, caused primarily by lack of planning and organization. These combined socio-economic and Architectural solution to the numerous set back related to land/water transportation in particular makes this project a highly welcome and necessary catalyst for the overall development of the state.

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